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Satellites to assess coral reef health

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ON THE ALERT: Continuous monitoring through the advisories issued by INCOIS would enable the authorities to prepare bleaching response plans.

Special Arrangement

High-end satellite technology is coming to the aid of protecting earth's largest biological structures — the coral reefs which have taken millions of years to form and are declining at alarming rates worldwide.

Coral bleaching is one of the main reasons for increased deterioration of reef health. Corals are sensitive to changes in temperature and this aspect has come in handy for scientists to forewarn about the possibility of coral bleaching. When exposed to higher temperatures over an extended period of four to five weeks, the corals bleach and this in turn affects the marine ecosystem. Scientists at the Indian National Centre for Ocean Information Services (INCOIS) are using satellite technology to glean data on Sea Surface Temperatures (SST). Based on an average temperature for a particular period, they assess if the coral reefs are facing thermal stress and forewarn about the probability of bleaching.

Once they start bleaching, the corals expel the symbiotic organism (zooxanthellae) from which they derive food and die as a result. "Corals act as breeding and feeding ground for a variety of fishes. Corals are the forests of oceans," said Dr. T. Srinivasa Kumar, Head of the advisory service and satellite oceanography group.

Exploiting the potential of satellite technology, INCOIS has started the Coral Bleaching Alert System (CBAS) for Indian coral reefs located in Andaman & Nicobar Islands and elsewhere in India.

It is also issuing coral bleaching advisories regularly on a bi-weekly basis and hosting the information on its website, besides providing it to the Union Ministry of Environment and Forests and other coastal authorities.

According to R.S. Mahendra, scientist at INCOIS, coral reef ecosystems have been declining at an alarming rate worldwide in recent decades. He said various parameters like SST climatology, bleaching HotSpot (HS) and Degree of Heating Weeks (DHWs) are used to generate the data by using the Advanced Very High Resolution Radiometer (AVHRR) sensor on-board National Oceanic and Atmospheric Administration (NOAA) satellites.

Dr. Mahendra said continuous monitoring through the advisories issued by INCOIS would enable the authorities to prepare bleaching response plans and also better manage interactions leading to coral bleaching.

According to Dr. Kumar, satellite data on ocean colour and sediment deposits were also being used to monitor the health of corals.

INCOIS in collaboration with Space Application Centre carried out mapping of the coral reefs of India. Eco-morphological zonation of coral reefs has been generated using Indian Remote Sensing (IRS) satellite data on 1:25000 scales for Andaman and Nicobar Islands, Gulf of Kachchh, Malvan and Gulf of Mannar.

These maps provide baseline information on coral area and eco-morphological diversity.

Keywords: [coral reef](#), [satellite technology](#)

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